

Networked Communications and Speech System for Airspace System Assessments, Phase I

Completed Technology Project (2012 - 2012)



Project Introduction

As concepts and technologies being developed for the Next-Generation Air Transportation System (NextGen) mature, the natural progression is to study their integration and evaluation in the operational environment. Before they can be integrated into the National Airspace System (NAS) for evaluation in the field, they typically have to undergo extensive human-in-the-loop (HITL) testing in a controlled laboratory environment to identify and work out the issues. Depending on the particular concept/technology, the HITL experiments may involve subject matter experts (SMEs) including air traffic controllers (ATC) and pilots. The laboratory environment would include realistic operational equipment such as appropriate ATC stations and flight-deck equipment. One important system in this environment is a realistic communication system for simulating radio communications among the controllers and pilots. In current-day operations, controllers and pilots communicate by voice over VHF radio. In the laboratory environment, this communications capability is typically provided by a dedicated communication system, which represents a cost liability in addition to the controller stations and flight-deck equipment. In addition to the acquisition cost, there is life-cycle cost associated with maintenance of the hardware as well as space requirements for the special hardware. The proposed research considers the development of two technologies to ease the cost of providing the necessary communications capability as well as the cost and inconvenience in hiring secondary SMEs to support the experiments: (i) a software-based networked communications system based on Voice-over-IP (VoIP) technology that obviates the need of special hardware, and (ii) an automated speech agent that can take the place of the secondary SMEs in communicating with the primary SMEs and interacting with the operational environment.



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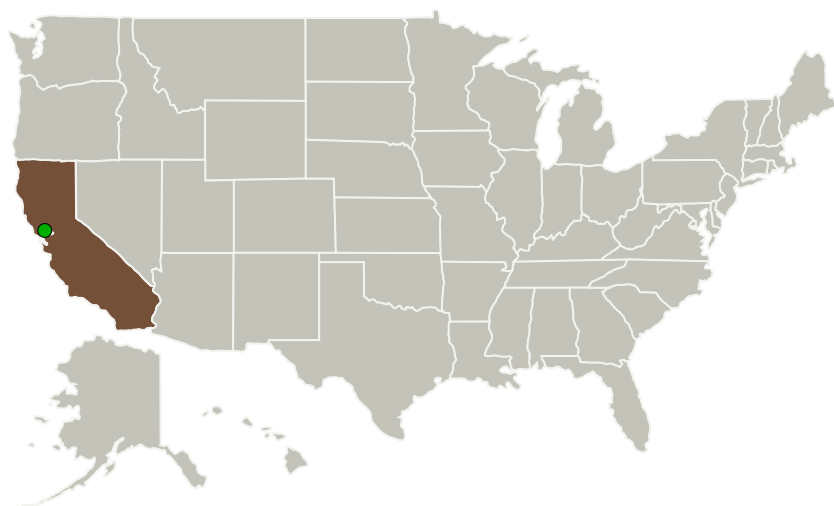
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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Optimal Synthesis, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Los Altos, California
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations

California

Project Transitions

**February 2012:** Project Start

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Optimal Synthesis, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Victor H Cheng

Co-Investigator:

Victor H Cheng

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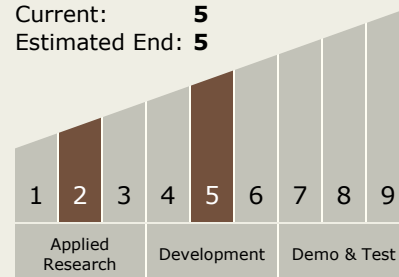
August 2012: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/140259>)

Technology Maturity (TRL)

Start: 2
Current: 5
Estimated End: 5



Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
 - TX16.3 Traffic Management Concepts

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System